

## REMARKS/ARGUMENTS

The final Office Action of January 9, 2008, and the Advisory Action mailed January 29, 2008 have been carefully reviewed and these remarks are responsive thereto. Independent claims 23 and 24 have been amended to clarify features of the invention. Claims 23-40 are pending, and allowance of these claims is respectfully requested.

### Rejection under 35 U.S.C. 112

Claims 23-40 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Specifically, the features of "increasing the pH of the lemon/lime flavored beverage" and "stability of the lemon/lime flavored beverage is improved by increasing the pH of the lemon/lime flavored beverage" in independent claims 23 and 24 were deemed to be indefinite. In the Advisory Action mailed January 29, 2008, the recitation of "acceptable flavor" in claims 23 and 24 were deemed to be unclear. Independent claims 23 and 24 have each been amended to clarify the features of the invention.

Claims 23 and 24 have been amended as follows:

23. (Currently Amended) A method comprising:

- (a) including in a lemon/lime flavored beverage an acidulant system consisting of (i) citric acid and (ii) adipic acid having a smaller dissociation constant than citric acid; and
- (b) increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt,

wherein the ratio by weight of said adipic acid : said citric acid is 1 : 15 to 1 : 3, and wherein the stability of the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture is improved by increasing the pH of the lemon/lime flavored beverage while also maintaining or increasing the tartness of the beverage over the same beverage without said ratio of said adipic acid to said citric acid.

24. (Currently Amended) A method comprising:

- (a) including in a lemon/lime flavored beverage an acidulant system consisting of (i) a combination of phosphoric acid and citric acid and (ii) adipic acid having a smaller dissociation constant than both phosphoric acid and citric acid; and
- (b) increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt,

wherein the ratio by weight of said adipic acid : said phosphoric acid : said citric acid is 3.0-4.0 : 1.4-2.0 : 1.0, and wherein ~~the stability of the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture is improved by increasing the pH of the lemon/lime flavored beverage while also maintaining or increasing the tartness of the beverage over the same beverage without said ratio of said adipic acid to said phosphoric acid to said citric acid.~~

As shown above, independent claims 23 and 24 have both been amended to specify the feature of "increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8." This amendment is supported at least by paragraph [0025] of the application as originally filed. The pH range has thus been set forth in the claims.

Further, claims 23 and 24 have been amended to clarify the standard of stability by including the feature that "the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture." This amendment is supported at least by paragraph [0037] of the application as originally filed, which discloses that a panel of cola experts found that lemon/lime flavored cola drinks made according to the invention had acceptable flavor (*i.e.*, maintained their flavor) and were tart seven months after manufacture. Accordingly, the standard of stability has been clarified.

Applicants respectfully submit that the indefiniteness rejections have been rendered moot as to independent claims 23 and 24, as amended, and thus also with respect to dependent claims 25-40.

Rejection under 35 U.S.C. 103(a)

Claims 23-30 and 33-40 were rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al. (US 4,830,862) in view of combination of Van Ness (US 3,245,798) and Nakel et al. (US 4,551,342).

Claims 31 and 32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Braun et al. in view of combination of Van Ness and Nakel et al. as applied above further in view of Lee et al. (US 5,348,756).

As discussed above, independent claims 23 and 24 have been amended to recite the features of “increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8” and the feature that “the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture.” As noted in the Background of the present application, prior to the present invention, it was difficult to produce a lemon/lime flavored beverage that maintained its tartness and had a good shelf life. *See* paragraphs [0004] and [0007] of the application as originally filed.

The Background of the present application further notes that in addition to problems associated with shelf life, the instability of lemon/lime flavor at lower pHs limits the applications to which lemon/lime flavor can be applied (*see* paragraph [0005]). As specifically noted in paragraph [0005] of the present application:

For example, cola beverages are typically formulated to a pH of about 2.5 to 2.8 using two acidulants, namely phosphoric acid and citric acid, and sodium or potassium citrate as a buffering salt. Due to the low pH, it is not possible to make a good tasting, storage-stable lemon/lime flavored cola drink by simply adding lemon/lime flavor to such a conventionally formulated cola drink since the lemon/lime flavor will degrade and compromise the overall flavor of the cola.

As noted in the Background of the present application:

[0007] Hence, there exists a dilemma in the formulation of lemon/lime flavored beverages. There are competing interests (1) to raise the pH significantly to improve the stability of lemon/lime flavor and (2) to maintain or increase the tartness perception commonly associated with the lemon/lime flavor. In short, there is a need for good tasting, storage-stable lemon/lime flavored beverages.

The Office Action does not dispute the above statements in the present application. The claimed method provides a solution to the dilemma in the formulation of lemon/lime flavored beverages. There is no teaching in any of the cited references, either alone or in combination of a method including “increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt, wherein the ratio by weight of said adipic acid : said citric acid is 1 : 15 to 1 : 3, and wherein the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture,” as claimed in amended claim 23.

As recognized in the Office Action, “Braun is silent as to the specific amount of adipic acid in a lemon-lime beverage.” Although Braun discloses beverages having a pH between 2.5 and 5.0, Braun is completely silent on any method to maintain lemon/lime flavor and tartness of a lemon/lime flavored beverage for at least seven months following manufacture.

Van Ness and Nakel, like Braun, are also silent on any method to improve the stability of lemon/lime flavor of a lemon/lime flavored beverage by increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 and employing adipic acid and citric acid in the claimed ratios of 1:15 to 1:3. Van Ness does not teach any method to produce a lemon/lime beverage that maintains its lemon/lime flavor and remains tart for at least seven months following manufacture.

Nakel does not even mention adipic acid, let alone a ratio of adipic acid to citric acid being 1:15 to 1:3. Moreover, Nakel is silent regarding providing a stable lemon/lime *flavor*.

Nakel merely discloses beverage concentrates that are stable with respect to a lack of insoluble salt formation during storage. Nakel does not teach any method to improve the stability of a lemon/lime flavored beverage, which remains tart for at least seven months following manufacture."

One or ordinary skill in the art would expect that increasing the pH of a lemon-lime or cola beverage to between about 3.2 and about 3.8 would improve the stability of the beverage flavor, but that doing so would reduce the tartness of the beverage. One of ordinary skill in the art would expect this reduction in tartness of a lemon/lime beverage when the pH is raised regardless of whether or not adipic acid is added in addition to or in place of an amount of citric acid in the beverage. Thus, the method of the present invention yields much more than a predictable result. Indeed, the method of the present invention solves a dilemma in the industry dating back to at least 1994 (the date of Freeburg, et al., Perfumer & Flavorist, vol. 19, pp. 23-32 (1994), cited in paragraph [0004] of the present application).

One of ordinary skill in the art would not have been motivated to modify the lemon-lime or cola beverage taught by Braun to contain adipic acid (either in addition to or in place of citric acid as taught by Van Ness) in a particular ratio to citric acid of 1:15 to 1:3, while keeping the total acid of the beverage in the desired range using the formula taught in Nakel, and also increase the pH to between about 3.2 to about 3.8 to improve the stability of the flavor because one of ordinary skill in the art would have expected that such a method would result in a beverage with unacceptably compromised tartness.

While Braun and Van Ness may teach that adipic acid can be used in a beverage, there is no teaching in any of the cited art that a specific ratio by weight of adipic acid to citric acid can solve the problem of tartness of a lemon/lime flavored beverage being unacceptably compromised when the pH of the lemon/lime flavored beverage is raised to make the flavor of the beverage stable for a longer period of time. The prior art provides no guidance whatsoever, as to which acid combination and ratio by weight of acids within such an acid combination could possibly solve the above tartness problem when the pH of a lemon/lime flavored beverage is increased, such as to between 3.2 and 3.8.

Thus, one of ordinary skill in the art would not have been motivated by a combination of Braun, Van Ness and Nakel, to practice the method of independent claim 23. Even if one of ordinary skill in the art was motivated to combine Braun, Van Ness and Nakel, the proposed combination does not result in the claimed invention. None the cited art, either alone or in combination, teaches the method including “increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt, wherein the ratio by weight of said adipic acid : said citric acid is 1 : 15 to 1 : 3, and wherein the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture” as claimed in claim 23.

The same reasoning applies as to why independent claim 24, which claims a specific ratio by weight of adipic acid to phosphoric acid to citric acid, is patentable over the cited art.

The present application provides clear and convincing evidence of patentability of the pending claims. Specifically, the present application provides comparison testing that proves the claimed method improves the stability of lemon/lime flavor of a lemon/lime flavored beverage, without sacrificing the tartness of the lemon/lime beverage. *See* paragraphs [0027] through [0030], setting forth Examples 1 and 2 (embodiments of the claimed invention, having a pH of 3.43 and 3.55, respectively), paragraphs [0033] through [0036] (Comparative Examples 1 and 2 (controls), having a pH of 2.74 and 3.02, respectively), and paragraph [0037] (taste testing comparison between embodiments of the claimed invention and the controls).

As noted in paragraph [0037] of the application as originally filed, when a panel of cola experts tasted the embodiment of Example 1 and control Comparative Example 1 immediately upon manufacture, i.e., fresh beverages, the experts adjudged the drinks Example 1 to be more tart. Seven months after manufacture, a panel of cola experts re-evaluated the cola drinks made according to Example 1 and Comparative Example 1, and unanimously found the flavors in the drinks of Comparative Example 1 had decomposed significantly, rendering the drink quality unacceptable. On the contrary, the drinks according to Example 1 were judged as more tart and had acceptable flavor and taste. One of ordinary skill in the art would have expected that

Example 1 having a pH of 3.43 upon its manufacture would have less tartness than Comparative Example 1 having a pH of 2.74 upon its manufacture – not the opposite as shown in present application.

As noted in paragraph [0038] of the present application, a panel of lemon/lime flavored carbonated soft drink experts tasted 4-week old drinks made according to Example 2 and Comparative Example 2. The experts adjudged the drinks of Example 2 to be more tart and have a stronger lemon/lime taste. One of ordinary skill in the art would have expected that Example 2 having a pH of 3.55 upon its manufacture would have less tartness than Comparative Example 2 having a pH of 3.02 upon its manufacture – not the opposite as shown in present application.

In view of the foregoing, it is respectfully submitted that independent claims 23 and 24 are patentable over the prior art. The dependent claims are patentable for at least the same reasons that independent claims 23 and 24 are patentable, and for the additional features recited therein.

As noted in the Background of the present application, Lee U.S. Patent 5,348,756 relates to gelatin gels and powdered mixes therefore only. Lee does not remedy the deficiencies in Braun, Van Ness or Nakel. Lee does not teach a method including “increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt, wherein the ratio by weight of said adipic acid : said citric acid is 1 : 15 to 1 : 3, and wherein the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture,” as claimed in claim 23. The same reasoning applies as to why independent claim 24, which claims a specific ratio by weight of adipic acid to phosphoric acid to citric acid, is patentable over the cited art. Thus, dependent claims 31 and 32 are patentable over the prior art.

There is no suggestion to combine the teachings and suggestions of the prior art that results in independent claims 23 and 24, as amended, except using Applicant’s invention as a template through a hindsight reconstruction of Applicant’s claims. Such hindsight reconstruction is improper under *KSR Int’l v. Teleflex, Inc.*, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007). Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead there must be some articulated reasoning with some rationale underpinning to support the legal

conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (cited with approval in *KSR*). One of ordinary skill in the art at the time of the invention would not have reasonably looked to the other cited art modify Braun in the manner suggested in the Office Action.

As noted above, one of ordinary skill in the art would have expected that increasing the pH of a lemon-lime or cola beverage to between about 3.2 and about 3.8 would improve the stability of the beverage flavor, **but that doing so would reduce the tartness of the beverage.** As noted above, one of ordinary skill in the art would expect this reduction in tartness of a lemon/lime beverage when the pH is raised regardless of whether or not adipic acid is added in addition to or in place of an amount of citric acid in the beverage. One of ordinary skill in the art had no reasonable expectation of success that a method including “increasing the pH of the lemon/lime flavored beverage to between about 3.2 and about 3.8 by including in the lemon/lime flavored beverage a buffer salt system consisting of a citrate salt and a phosphate salt, wherein the ratio by weight of said adipic acid : said citric acid is 1 : 15 to 1 : 3” would provide the result in which “the lemon/lime flavor of the beverage is maintained and the beverage remains tart for at least seven months following manufacture” as claimed in claim 23. As previously noted, the method of the present invention solves a dilemma in the industry dating back to at least 1994 (the date of Freeburg, et al., Perfumer & Flavorist, vol. 19, pp. 23-32 (1994), cited in paragraph [0004] of the present application).

The same reasoning applies as to why independent claim 24, which claims a specific ratio by weight of adipic acid to phosphoric acid to citric acid, is patentable over the cited art.

### Conclusion

In view of the foregoing, it is respectfully submitted that pending claims 23-40 are in condition for allowance. The Examiner is invited to contact the undersigned at the telephone number provided below, should it be deemed necessary to facilitate prosecution of the application.

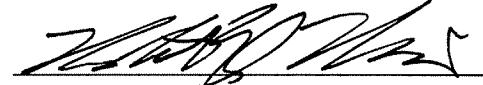
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Respectfully submitted,

BANNER & WITCOFF, LTD.

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